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hydromica schists occupy the student's attention when he might better be learning something more about gabbro than that it is a "coarse diabase." The use of "syenitic" as an adjective synonymous with hornblendic is no longer to be tolerated in an elementary text-book, in spite of "its wide popular use in this sense in this country." This wrong usage of the word will never be done away with so long as it is taught in the text-books.

There are some inconsistencies in the classification, but they are not mischievous. There are also several statements concerning the composition and origin of a few rocks that will not bear close scrutiny.

Since there are no very elementary text-books dealing with rocks published in English, the present volume has a place to fill. It is a welcome aspirant for the honor of initiating beginners into rock study. It would have been more welcome, however, had it left some of its useless baggage behind. We hope Professor Tillman will revise the entire book, as there are many good points about it. In its scope it certainly "fills a want." The volume contains 38 crystallographic figures but otherwise is not illustrated. W. S. B.

The Differentiation at Magnet Cove.—Washington¹ has made new analyses of some of the Magnet Cove plutonic rocks that lead to interesting conclusions. He finds that many of the earlier analyses are lacking in accuracy. The new analyses result in a change in the former classification of some of the rocks and seem to render necessary a few new rock names. From the analyses he calculates the composition of some of the important types to be as in the table on opposite page.

The covite was formerly regarded as a shonkinite. Its qualitative composition is close to that of theralite. The latter, however, contains a large quantity of nepheline, while the former contains a comparatively small quantity. On the other hand, shonkinite is melanocratic, while covite is mesocratic (that is, it contains about equal quantities of dark and light constituents). According to Rosenbusch's definition covite is a typical shonkinite, but Rosenbusch's shonkinite is an entirely different type from the original shonkinite of Pirsson.

The arkite has been wrongfully designated a syenite. It is most nearly allied to missourite, but it differs from this rock in the same way that covite differs from shonkinite, *i.e.*, it is a leucocratic

¹ *Journ. of Geol.*, vol ix (1901), p. 607.

aggregate of leucite and nepheline, with subordinate dark components. The author defines it as a "holocrystalline, porphyritic, leucocratic combination of leucite (or pseudo-leucite) and nephelinite, with pyroxene and garnet." The jacupirangites of Brazil vary from rocks rich in nepheline (true ijolites), through rocks composed predominantly of pyroxene with small and varying amounts of magnetite and nepheline, to types rich in magnetite and with little or no nepheline. The Magnet Cove rock corresponds to the intermediate of the Brazilian types.

	I.	II.	III.	IV.	V.	VI.	VII.
Orthoclase	35.1	28.6	51.8	29.3	3.9		
Albite	39.8	39.0		22.8			
Leucite					36.9		
Nepheline	3.1	6.2	20.3	9.0	25.5	38.7	4.0
Cancrinite			13.1				
Sodalite	1.2						
Nosean		1.2					
Ægirite	5.1	6.9	5.7	4.5	8.4	4.6	
Hornblende	11.0	7.9	8.6	18.8	Augite	6.9	15.0
Diopside				9.0	10.8	31.3	64.0
Biotite							5.0
Apatite5			1.0		3.0	
Sphene		2.7	.5	3.1			
Magnetite				2.5			8.7
Extra Al_2O_3 . . .	4.2		Garnet		14.5	15.3	

I. Pulaskite, from Fourche Mt., Arkansas.

II. Pulaskite (foyaite), Braddock's Quarry, Fourche Mt.

III. Foyaite, Diamond Jo Quarry, Magnet Cove.

IV. Covite, near schoolhouse, Magnet Cove.

V. Arkite (leucite-porphyry), near Diamond Jo Quarry.

VI. Ijolite, near Dr. Thornton's, Magnet Cove.

VII. Jacupirangite, near Baptist church, Magnet Cove.

In a second¹ article the author discusses the chemical relationships of the rocks with great fullness. He represents the variations in their composition by diagrams and with the aid of these calculates the composition of the magma which gave them birth by methods that are somewhat novel. The peculiar differentiation of the mass is thought to be due to its small size. The process was probably a "sort of fractional crystallization, the magma being regarded as a solution, so that, in accordance with the laws of cooling solutions, the solvent (the portion in excess) crystallizes out first around the borders on

¹ *Journ. of Geol.*, vol. ix (1901), p. 645.

cooling of the mass." The original body of magma was leucocratic, so that the alumina and alkalis with silica enough for the formation of feldspar and feldspathoids, crystallized first, and hence in the periphery of the mass.

Densities of Liquid and Solid Rock Magmas.—In view of the fact that a recently proposed theory of volcanic action accounts for the eruption of lava as the consequence of the expansion of liquid magma in its passage to the solid state, a paper by Doelter,¹ in which this author discusses the densities of liquid and solid magmas, becomes of great interest. By means of a series of experiments, in the course of which fragments of known density were allowed to float or sink in molten magmas, Doelter obtained a series of results which are embodied in the following table, the figures indicating specific gravities:

	NATURAL SUBSTANCE.	MOLTEN.	GLASSY.	CRYSTALLINE.
Melanite. . . .	3.75	3.55-3.6	3.55-3.6	3.65-3.7
Augite	3.3	2.92	2.92-2.95	3.2-3.25
Limburgite . . .	2.83	2.55-2.57	2.55-2.57	2.75-2.78
Lava (Ætna) . .	2.83	2.58-2.74	2.71-2.75	2.81-2.83
Lava (Vesuvius) .	2.84	2.68-2.74	2.69-2.75	2.77-2.81
Nephelinite . . .	2.74	2.70-2.75	2.686	2.72-2.75
Leucitite	2.83	2.60-2.68	2.68-2.72	2.75-2.79

The Laccolite of Shefford Mountain.²—Shefford Mountain is the easternmost of the series of nine hills of igneous material that rise above the St. Lawrence valley in the neighborhood of Montreal. It is thought by Dresser to be an old laccolite in Lower Cambrian and Trenton sediments. Its material consists of essexite, nordmarkite, and pulaskite, the first two of which possess almost the typical character of these rocks. Associated with these are dark-colored dykes of a camptonitic type, and others of a theralitic type, and light-colored ones of trachyte and bostonite. The latter are the younger. All the rocks are thought to be differentiated products of a single magma. The primary magma, according to this view, had nearly the composition of pulaskite. Excluding the dykes the first differentiate was the basic essexite, the second was the acid nordmarkite, and the third the intermediate pulaskite. The analyses of the essexite (I),

¹ *Neues Jahrb. of Univ.*, etc., Bd. ii (1901), p. 141.

² *Amer. Geologist*, vol. xxvii (Oct., 1901), p. 205.